

**ASIAN BITING FLY STUDIES I¹: TABANIDAE—
SPECIES RELATED TO *TABANUS BASALIS*
MACQUART, 1838, WITH THE DESCRIPTION
OF A NEW SPECIES FROM NEPAL**

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Oriental species of Tabanidae are in great need of revision using modern taxonomic methods. Unfortunately most collections of Asian tabanids are fragmentary and practically nothing is known of the biology of the species. With the quantity of material available to me¹, a preliminary grouping and revision is now advisable. Some errors in synonymy and interpretation of species relationships will almost certainly result because of lack of access to many of the pertinent types and the poor quality of old descriptions.

Descriptive studies of the Tabanidae are complicated by our poor understanding of variation at the species level and a lack of structural characters in these flies. As a result there is much dependency on tinctorial characters. These problems have been discussed by Stone (1938: 2,4). Unfortunately the color and pattern of a poorly preserved or a preserved and subsequently mounted tabanid may have practically no relation to that of a well preserved or freshly captured one. This factor is the most difficult one with which the taxonomist must contend.

Species in the *basalis* group are: 1, *abbasalis* Philip, 1960, Thailand; 2, *annamensis* Philip, 1960, Annam; 3, *basalis* Macquart, 1838, Sumatra, Java; 4, *chrysater* Schuurmans Stekhoven, 1926, Java; 5, *cinnamomeus* Doleschall, 1858, Amboina; 6, *fuscumaculatus* Ricardo, 1911, Upper Burma, Sikkim; subsp. *altermaculatus* Ricardo, 1913a, Manipur; var. *unisignatus* Szilady, 1926, So. Celebes; 7, *jacobi*, n.sp., Nepal; 8, *joidus* (Bigot), 1892, Assam; 9, *laotianus* (Bigot), 1892, Laos; 10, *ochroater* Schuurmans Stekhoven, 1926, Sumatra; 11, *pallidepectoratus* (Bigot), 1892, Cochin

¹ Under the title 'Asian Biting Fly Studies', the examination of various groups of potential and known vector species of flies is being supported by a grant from the National Institutes of Health (E-4541) and is administered by the Smithsonian Institution. The principal groups to be studied are the Culicidae and the Tabanidae. Collections of the mosquitoes are available from Nepal, Thailand, Afghanistan, New Guinea and the Philippines; of tabanids from Nepal and Thailand.

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China, Formosa; var. *aurea* Surcouf, 1922, Laos; 12, *pendleburyi* Philip, 1960, Brit. No. Borneo; 13, *pseudopallidepektoratus* Surcouf, 1922, Laos; 14, *siamensis* Ricardo, 1911, Thailand; 15, *sziladyi* Schuurmans Stekhoven, 1932, ? Sumatra, ? China; 16, *thurmani* Philip, 1960, Thailand; 17, *xanti* Szilady, 1926, So. Celebes.

Although it would be desirable to have a key to the species which are included in the *basalis* group, the descriptions of most of the species are so poor that it is not possible with my present knowledge of the group to construct an accurate key. However, I have grouped the species according to the number of basal abdominal tergites which are wholly or almost wholly deep yellow or orange:

Species with only the first two abdominal tergites so colored: *abbasalis*, *basalis*, *ochroater*.

Only first three abdominal tergites so colored: *jacobi*, *pendleburyi*, *?sziladyi*, *thurmani*.

Only first abdominal tergites so colored: *annamensis*, *chrysater*, *fuscumaculatus*, f. ssp. *altermaculatus*, *joidus*, *pseudopallidepektoratus*, *siamensis*, *?xanti*.

First five abdominal tergites so colored: *pallidepektoratus*, *p.* var. *aurea*.

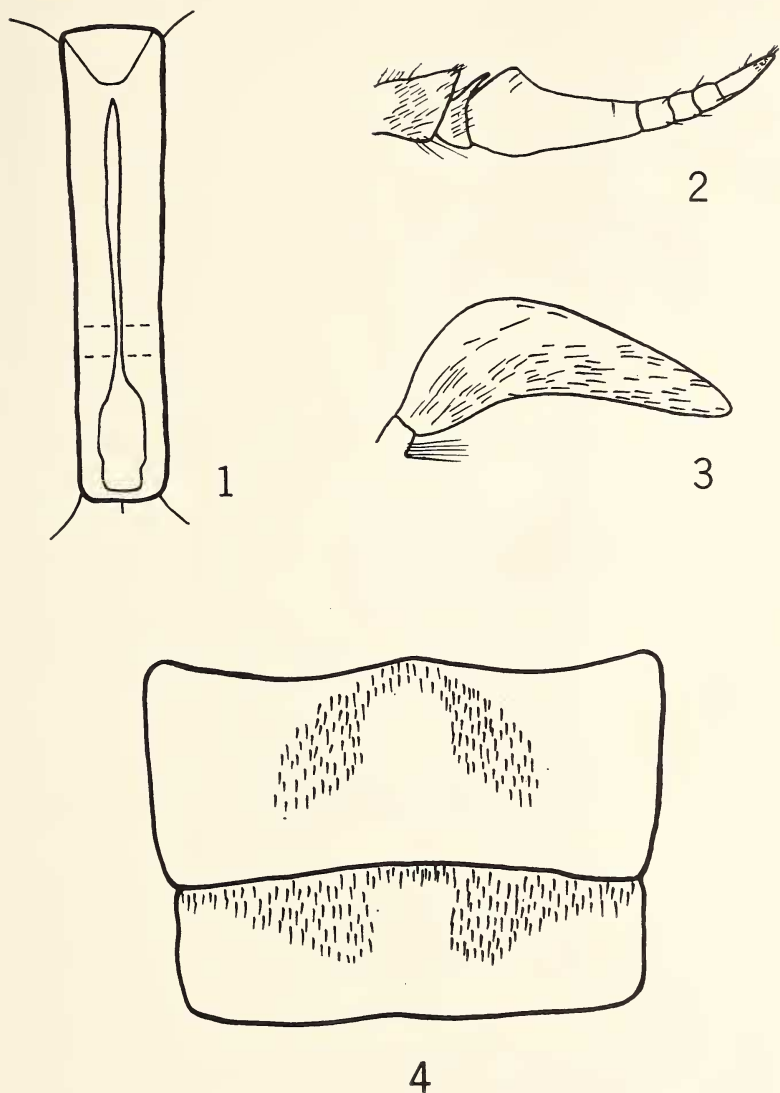
Species whose names are preceded by question marks are not clearly described, and there is no information available on the following: *cinnamomeus*, *laotianus*, *fuscumaculatus* var.

Collections listed in this paper were made by myself except where otherwise stated.

1. *Tabanus jacobi*, n. sp.

Female.—*Head*: with subcallus, face, and cheeks yellow; frons golden pollinose and nearly parallel-sided, with index of 6; callosity (Fig. 1) red-brown, subrectangular, tapered and confluent with narrow median, line-like red-brown callus (sometimes divided by pollinosity in area delimited by dotted lines on figure) and not touching eye margin; vertexal triangle variable, sometimes reaching median callosity, sometimes almost absent; antenna (Fig. 2) with scape, pedicel, and plate orange, with style extremely variable but at least apex of last segment dark red-brown; parafacials and face, particularly dorsolateral corner, with fine yellow setae; beard yellow; palpus (Fig. 3) yellow, with variable mixture of black and yellow setae. *Thorax*: olive-green tomentose, somewhat more gray just dorsal to coxae, with pilosity mainly yellow and with some dark setae intermixed on scutum and a small patch of black setae anterior to mesocoxae. *Legs*: with coxae olive-green or grayish

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Tabanus jacobii, n. sp. Fig. 1, Frons. Fig. 2, Antenna. Fig. 3, Palpus. Fig. 4, Tergal segments II and III showing setal pattern.

tomentose with yellow and black setae; remainder purple-brown with concolorous setae except for basal half of foretibia and slightly more than basal half of mid and hind tibiae and some setae at base of mid and hind femora, all of which are orange-yellow. *Abdomen*: with tergites I to III orange with golden setae; TII (Fig. 4) with a median inverted broadly v-shaped patch of black setae; TIII (Fig. 4) with a variable median patch of black setae also resembling an inverted 'v' having a lateral extension along the basal margin of the segment; TIV to TVII with black setae, the integument with a hint of a lighter median apical triangle; SII to III orange, with a variable mixture of orange and black setae; SIV to VII black, with black setae. *Haltere*: orange. *Wing*: yellowish near base and along costal margin, suffused along R_3 and smoky through cells R_3 , R_4 , R_5 , M_1 , M_2 , M_3 and apically in Cu.

Types.—*Holotype* female: **Nepal**, Amlekhganj, 350 m., 30 July 1956, Shannon trap; in USNM collection. *Paratopotypes*: 30 July 1956, 5 ♀♀, Shannon trap; 8 July 1956, 2 ♀♀, Shannon trap; 10 July 1956, 7 ♀♀, (L. B. Jha), 2 ♀♀ (Keshav Ram), Shannon trap; 19 July 1956, 1 ♀, biting man; 8 Aug. 1957, 1 ♀, Shannon trap; 28 Aug. 1957, 19 ♀♀, Shannon trap; 29 Aug. 1957, 1 ♀, Shannon trap; 29 Aug. 1957, 1 ♀, at light. *Paratype*: Nepal, Bari-damar, 7 Oct. 1957, 1 ♀, Shannon trap.

Discussion.—I take great pleasure in naming this species for Dr. V. P. Jacob in whose company I spent two extraordinary years in the Nepal terai. This species is most closely related to *fuscocomaculatus* but differs by having only the first three abdominal tergites orange and by the form of the setal pattern. The setal pattern of the third segment is larger than that of the second in *jacobi*, whereas that on the third segment is smaller than that of the second in *fuscocomaculatus*.

2. *Tabanus thurmani* Philip, 1960.

Philip, 1960, St. Inst. Med. Res. Fed. Malaya No. 29: 24, illus.

My material consists of a single topotypic female taken at a light. Comparison with the type indicates that some emendation of the original description is necessary. Both specimens show a median integumental orange area extending along the apical margin of TV and an integumental orange margin to TVI. My specimen which is in fresher condition than the type shows: subcallus, parafacials, and face yellow-brown pollinose, the median ventral portion of the face suffused red-brown; frons golden pollinose; beard yellowish posteriorly; integument of basal two-thirds of foretibia orange-

brown; SV with olive-green pollinosity apically.

Material examined.—**Thailand**, Chiangmai, 13 July 1959.

3. *Tabanus siamensis* Ricardo, 1911.

Ricardo, 1911, *Rec. Indian Mus.* 4: 212, *illus.*

I have assigned a single female specimen to this species despite small differences from the description of *siamensis* which was originally described from badly rubbed material. The principal distinctive features of my specimen are: subcallus, face, vertex and mesonotum golden tomentose; frontal callus almost triangular rather than subquadrate with a dorsal linear extension; no yellow setae or integumental color on the posterior margin of sternites V and VI.

Material examined.—**Laos**, 40 miles E. of Vientiane on road to Pak San, 21 June 1959 (P. F. Beales).

4. *Tabanus pallidepectoratus* (Bigot), 1892.

Bigot, 1892, *Atylotus*, *Mem. Soc. Zool. France* 5: 57.

Ricardo, 1913, *Ann. Hist.-Nat. Mus. Natl. Hung.* 11: 172, ♂.

The male of this species was described from Formosa by Ricardo (1913b). I have seen a single additional male specimen in the collection of the Museum of Comparative Zoology at Harvard University.

Material examined.—**Formosa**, Hori, 6 June 1934 (L. Gressitt).

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ANNOUNCEMENT

A List of the Aphids of New York, by Mortimer D. Leonard, Washington, D. C. Proceedings of the Rochester Academy of Sciences, Vol. 10, No. 6, pp. 289-428, 4 plates. 1963. The life histories, economic importance, method of feeding, production of winged forms, productivity, role as vectors of plant viruses, and other pertinent information are discussed as introductory material. Detailed records of the distribution of about 350 species of aphids known to occur in New York and a list of over 700 food plants on which they occur are given. (For sale at \$1.50 by the Librarian, Rochester Academy of Science, Rush Rhees Library, University of Rochester, Rochester, N. Y.)